

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT -
SUPPLEMENTARY SHEET**

10/536728
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International Application No.
PCT/EP 03/09280

Re item I

Basis of the report

The amendments submitted with the letter of 12-20-2004 introduce subject matter which, in contravention of Article 34(2)(b) PCT, goes beyond the content of the disclosure of the international application on the filing date. The following changes are concerned: claim 17 newly added and claim 18 dependent on claim 17.

The feature of a bottom for the shallow tank having a slope aligned in the strip running direction over the entire length is **not clearly revealed by Figure 1**. Figure 1 clearly reveals that the slope of the shallow tank is aligned in the strip running direction only as far as the run-off. After that, the slope of the shallow tank is aligned counter to the strip running direction.

Re item V

Reasoned statement with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

- D1: US-A-5 932 025 (SYLVAIN DANIEL) August 3, 1999 (1999-03-08)
- D2: EP-A-1 035 233 (ANDRITZ PATENTVERWALTUNG), September 13, 2000 (2000-13-09)
- D3: EP-A-0 747 508 (GEWERK KERAMCHEMIE) December 11, 1996 (1996-11-12)
- D4: DE 100 32 717 A (SMS DEMAG AG) January 17, 2002 (2002-17-01)
- D5: US-A-5 579 788 (AMMERMAN WALTER DR ET AL) December 3, 1996 (1996-03-12)

2 **INVENTIVE STEP**

- 2.1 The present application does not meet the requirements of Article 33(1) PCT, because the subject matter of claims 1-15 and 16 is not based on an inventive step as defined by Article 33(3).
- 2.2 Document D1 is regarded as the closest prior art with respect to the subject matter of claims 1-15 and 16. It discloses (the references in parentheses relate to this document) a device for effecting the continuous treatment of a metal strip by means of a treatment liquid, the metal strip being guided horizontally through at least one tank (4) for accommodating the treatment liquid. The device further comprises a pump circulation tank (1) for preparing or storing and holding the treatment liquid, which is arranged directly under the tank (cf. column 2, lines 6-32, column 3, lines 16-26, 53-54, claims 1 and 2, Figures 2 and 3).
- 2.3 The subject matter of claim 1 therefore differs from the known document D1 in that the pump circulation tank has a bottom, having a slope over the entire length, the slope being aligned in the strip running direction and/or transversely in relation to the strip running direction.
- 2.3.1 The object to be achieved by the present invention can consequently be seen in making it possible for the pump circulation tank to be completely emptied more quickly.
- 2.3.2 The solution proposed in claim 1 of the present application to achieve this object cannot be regarded as inventive for the following reasons (Article 33(3) PCT):
- 2.3.3 The feature **that the pump circulation tank has a bottom, having a slope over the entire length, the slope being aligned in the strip running direction and/or transversely in relation to the strip running direction**, is only one of a number of obvious possibilities from which a

person skilled in the art would select one according to the circumstances to achieve the defined object, without any inventive activity.

A person skilled in the art, faced with this problem, would look for the relevant prior art and consequently find documents D3 and D4, the bottom surfaces of the tanks being inclined in the direction of the run-off (cf. D3, column 4, lines 30-31) or in the transverse direction (cf. D4, column 3, lines 12-19). It appears logical for a person skilled in the art who would like quicker complete emptying of the pump circulation tank that these features with a corresponding effect can also be applied in the case of the subject matter of the device of document D1. In this way, he would arrive at a device according to claim 1 without any inventive activity.

The subject matter of claim 1 is therefore not based on an inventive step in comparison with document D1 (Article 33(3) PCT).

- 2.4 D1 likewise discloses a method for modifying a treatment device, the deep tank being removed and a shallow tank and a pump circulation tank being installed in its place, and the pump circulation tank being arranged directly under the shallow tank (cf. column 1, lines 62-66, column 2, lines 1-15, claims 1-3).
- 2.5 The subject matter of claim 16 therefore differs from the known document D1 in that the pump circulation tank has a bottom, having a slope over the entire length, the slope being aligned in the strip running direction and/or transversely in relation to the strip running direction.
- 2.5.1 Claim 16 of the present application cannot be regarded as inventive for the same reasons as in item 2.3.3 of the present report (Article 33(3) PCT).
- 2.6 The dependent claims 2-15 cannot contain any features which, in combination with the features of any claim to which they relate, meet the

requirements of the PCT with respect to an inventive step, see documents D1, D2, D3, D4 and D5 and the corresponding passages cited in the search report. The reasons for this are as follows:

- 2.6.1 The main features of claims 2 and 3, **that the tank (1) is configured as a shallow tank with at least one cover**, are already disclosed in D1 (cf. column 3, lines 27-31, column 4, lines 49-50).
- 2.6.2 The main features of claims 4 and 5, **that the tank (1) is structurally mounted on at least one pump circulation tank (3), and accordingly the tank (1) and the pump circulation tank (3) form a unit**, are already disclosed in D1 (cf. column 3, lines 16-20, 53-54).
- 2.6.3 The main feature of claim 6, **that the tank (1) and the at least one pump circulation tank (3) are provided with a seal**, is already disclosed in D1 (cf. Figure 3, column 3, lines 11-15).
- 2.6.4 The main feature of claim 7, **that the bottom (9) of the tank (1) forms the cover for the at least one pump circulation tank (3)**, is already disclosed in D1 (cf. Figure 3).
- 2.6.5 The selection of the material for the tank (1) and the pump circulation tank (3) to be made of plastic, preferably polypropylene, is sufficiently known in the technical field with regard to the desired effect, that is to say better resistance to the corrosive attack of the treatment liquid or pickling liquid, and does not comprise any inventive step (see document D2, column 1, lines 47-54, claim 4, and document D3, column 5, lines 8-15, claim 12).

The subject matter of claim 8 is therefore not based on an inventive step (Article 33(3) PCT).

2.6.6 The main feature of claim 9, **that the tank (1) and the at least one pump circulation tank (3) are produced from rubberized steel**, is already disclosed in D1 (cf. column 3, lines 11-15, 35-38).

2.6.7 The subject matter of claim 10 of the present application (the references in parentheses relate to this application) therefore differs from the known features of document D1 in that the tank (1) is connected to the pump circulation tank (3) via run-off chambers (4) and/or via a run-off (6) accommodating a change in length.

The object to be achieved by the present invention can consequently be seen in emptying the tank in a simple manner via this run-off and the run-off chambers accommodating the treatment liquid leaving the tank and leading it into the pump circulation tank (see page 4, paragraph 2).

The solution proposed in claim 10 of the present application cannot be regarded as inventive for the following reason (Article 33(3) PCT).

2.6.7.1 Document D2 (the references in parentheses relate to this document) also discloses a device for effecting the continuous treatment of steel strips, especially for pickling, with a treatment vessel or tank (1), squeeze rolls being provided at the ends of the tank and arranged in a container or run-off chamber (13) (cf. column 1, lines 19-30, claim 1), and the tank (1) and the run-off chambers (13) being connected to a connecting shaft (15) or telescopic shaft (17), in order that a compensation for expansion is achieved (cf. column 1, lines 31-34, claims 2, 6 and 7, Figures 1 and 2). D2 also discloses that a run-off (8, 9) is provided at at least one end of the tank (1) (cf. column 1, lines 40-46, claim 3, Figures 1 and 2).

The subject matter of claim 10 is therefore not based on an inventive step in comparison with document D2 (Article 33(3) PCT).

2.6.7.2 Document D3, corresponding to the EP document of the US 5566694 document, which is cited in document D2, also discloses (the references

in parentheses relate to this document) a device for effecting the continuous treatment of steel strips, especially for pickling, with a pickling vessel or shallow tank (20) made of plastic, which is adjoined at both ends by end chambers or run-off chambers (12, 14), which have a run-in and a run-out for the metal strip and also an outflow for the pickling liquid and are likewise produced from plastic (cf. column 1, lines 1-10, claims 1 and 2, Figures 1, 2 and 4). Furthermore, D3 discloses that a thermal expansion of the shallow tank (20) is made possible, and that the shallow tank (20) is formed with expandable lines (cf. column 2, lines 3-22, claims 2-12).

The subject matter of claim 10 is therefore not based on an inventive step in comparison with document D3 (Article 33(3) PCT).

- 2.6.8 The invention according to claim 11, that the run-off (6) is arranged centrally in the tank (1), seen in the strip running direction, is already described in document D4 (see D4, column 4, lines 8-14, claim 10, Figure 5).

The subject matter of claim 11 is therefore not based on an inventive step (Article 33(3) PCT).

- 2.6.9 The invention according to claim 12, that the tank (1) has a bottom sloping down toward the run-off, is already described in document D4 and in document D5 (see D4, Figure 5, and document D5, column 3, lines 43-44, Figure 3).

The subject matter of claim 12 is therefore not based on an inventive step (Article 33(3) PCT).

- 2.6.10 The dependent claim 13 of the present application relates to a slight structural modification of the pickling device according to document D3 (see D3, column 3, lines 44-58, column 4, line 1 - column 5, line 7, Figures 1 and 4, claims 3, 4, 5 and 8) and document D5 (see D5, column

2, lines 56-67, column 3, lines 1-30, Figures 1, 2 and 3, claims 1, 5, 6, 12), which is within the bounds of what a person skilled in the art is accustomed to doing on the basis of the considerations that are evident to him, especially since the advantages thereby achieved can be readily foreseen.

Consequently, the subject matter of claim 13 is also not based on an inventive step.

2.6.11 However, it is generally known to a person skilled in the art that the feature **that, for ventilating and/or venting the pump circulation tank (3), at least one connecting line (14) is arranged between the pump circulation tank (3) and the tank (1)**, is equivalent to the feature known from document D5 (cf. column 3, lines 16-21), that venting of the treatment liquid from the inner space of a vessel is possible via a closable throttle valve, and if need be can be exchanged for this feature.

2.6.12 The main feature of claim 15, **that the treatment liquid is delivered from the at least one pump circulation tank (3) into the tank (1) by means of pumps**, is already disclosed in D1 (cf. column 3, lines 63-67, column 4, lines 1-20, claims 2, 5 and 6).

3 INDUSTRIAL APPLICABILITY

3.1 The subject matter of claims 1-16 meet the requirements of Article 33(4) PCT.